

PULSE FREQUENCY MODULATED VOLTAGE REGULATOR CAPABLE OF PROLONGING A MINIMUM OFF-TIME

Abstract

In a pulse frequency modulated (PFM) voltage regulator, a PFM switching controller is provided to generate a PFM switching signal for converting a DC voltage source to an output voltage. A minimum OFF-time controller provides the PFM switching signal with a minimum OFF-time. In response to the output voltage, a feedback circuit generates a feedback signal. When the output voltage is lower than a predetermined target voltage, an OFF-time prolonging circuit prolongs the minimum OFF-time in response to the feedback signal. In other words, a time of delivering energy to a capacitor from an inductor may be prolonged by the OFF-time prolonging circuit. Therefore, a ripple of the output voltage is effectively reduced when the PFM voltage regulator is operated in a heavy loading condition.